

Application No.: 10/648023  
Docket No.: AD6910USNA

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### **REMARKS**

#### **Rejections under 35 U.S.C. § 112, second paragraph**

Claims 1-3 have been rejected as being indefinite. The examiner has stated that the term "relatively" is a relative term that renders the claim indefinite. The term "relatively" as used in the claim is discussed in the application on page 1, lines 25-28. As stated therein, the "relatively transparent" object is at least partially transparent to the wavelength of the laser light used for welding and the "relatively opaque" object absorbs a significant portion of the incident laser radiation. It would be understood by those skilled in the art of laser welding polymeric objects that the objects to be welded are transparent and opaque relative to one another, as such is necessary for the very process of laser welding. It would also be understood by one skilled in the art that the degree of necessary opacity and transparency for any given welding situation will vary with standard factors such as the laser power used etc. and can be easily determined without undue experimentation. Furthermore, the claim states that the relatively transparent first object has a diffuse transmittance of at least 15% through the thickness at which the object is welded. It would be clear to one skilled in the art that the relatively opaque object will have a diffuse transmittance that is less than that of the relatively transparent first object. Thus the applicant believes that the claims are definite.

#### **Rejections under 35 U.S.C. § 103(a)**

Claims 1-3 have been rejected as obvious over Koshida (WO 02/057353) in view of the admitted prior art and Cartier et al. (U.S. 2004/011672).

Cartier et al. has a filing date of December 17, 2002 and a publication date of June 17, 2004. The present application was filed on August 26, 2003 and claims priority to a U.S. provisional application filed on August 29, 2002. Therefore, Cartier et al. is believed not to be proper prior art under 35 U.S.C. § 103(a).

The process of the present invention uses polymeric objects comprising poly(ethylene terephthalate) (PET) that contains one or more nucleating agents that absorb no more than 7% of their weight in water. It is desirable to use at least one nucleating agent in PET compositions, as, without one, PET can be slow to crystallize and hence difficult to mold. It was discovered that nucleating agents that absorb too much water can lead to compositions that are difficult to laser weld when parts

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molded therefrom are exposed to humid environments, as they are likely to be in many manufacturing locations.

For example, in the case of Example 8 and Comparative Example F in the present invention, objects molded from PET compositions nucleated with sodium montanate and sodium stearate, respectively, were conditioned under conditions of 65% relative humidity and then laser welded to other test pieces. A set of the resulting welded articles were further conditioned at 80 °C and 95% relative humidity for 1000 hours and then at 23 °C and 65% relative humidity for 24 hours.

The articles made from the composition containing sodium montanate (which absorbs about 0.45 percent of its weight in water (see Table 1)) retained most of their weld strength after post-welding conditioning relative to a set of welded articles that were not conditioned after welding (see Table 5). On the other hand, the articles made from the composition containing trisodium phosphate (which absorbs about 30 percent of its weight in water (see Table 1)) lost a substantial portion of weld strength after post-welding conditioning relative to a set of welded articles that were not conditioned after welding (see Table 5).

A similar effect is illustrated by Example 9 and Comparative Example G, where objects were conditioned at 80 °C and 95% relative humidity for 1000 hours prior to welding. Objects made from PET compositions nucleated with sodium montanate rather than trisodium phosphate showed significantly better weld strengths when later welded.

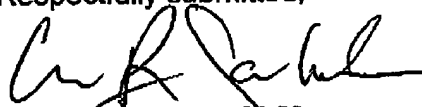
Koshida and any admitted prior art do not suggest that the use of nucleating agents that absorb no more than 7% of their weight in water in PET compositions to be used for laser welding leads to significantly improved weld strength when the objects to be welded or welded parts are exposed to humidity before or after welding relative to compositions that contain nucleating agents that absorb more water. In fact, Koshida is silent on the issue of the moisture absorbing properties of any nucleating agents used and their effect on laser weldability and strength of resulting laser welds. Therefore, one would have had no motivation to combine the teachings of Koshida with any admitted prior art to arrive at the present invention.

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Thus, the applicants believe that claims 1-3 are non-obvious and patentable.  
In view of the foregoing, allowance of the above-referenced application is respectfully requested.

Respectfully submitted,



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